REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 7, 9-11, 13 and 21-24 are presently active; Claim 8 having been canceled without prejudice, Claims 1-6, 12, and 14-20 having been withdrawn by a Election of Species Requirement, and Claims 7, 9, 11, and 13 having been amended, Claims 21-24 having been added by way of the present amendment. No new matter has been added.

In the outstanding Office Action, Claims 8 and 9 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 7 and 13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ma et al. (U.S. Pat. No. 6,407,435). Claims 10 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ma et al.

Regarding the 35 U.S.C. § 112, second paragraph, rejection to Claims 8 and 9, the features of Claim 8 have been incorporated into Claim 7, 11, and 13 and amended to more particularly point out that dm (m=1, 2, ..., n) is the thickness of the m-th layer of the barrier layers and εm (m=1, 2, ..., n) is the relative permittivity of the m-th layer of the barrier layers. Thus, it is respectfully submitted that the 35 U.S.C. § 112, second paragraph, rejection has been overcome.

In response to the rejection of the Claims 7, 10, 11, and 13, the independent Claims 7, 11, and 13 have been amended to clarify the claimed subject matter, and thereby were clearly patentably distinguish over the applied prior arts. No new matter has been added. [1]

[1] For example, Specification, page 25, lines 12-18, page 29, lines 2-15, and page 39, line 26 through page 40, line 16.

Claims 7, 11, and 13 recite that the following condition is satisfied: $2.5 > (d1/\varepsilon1 + d2/\varepsilon2 + \ldots + dn/\varepsilon n)$ where dm (m=1, 2, ..., n) is the thickness of the m-th layer of the barrier layers and εm (m=1, 2, ..., n) is the relative permittivity of the m-th layer of the barrier layers. By these features, the inventions recited in Claim 7, 11, and 13 can provide an insulating film with sufficiently high tunneling barrier height while suppressing the equivalent oxide thickness, and therefore, high dielectric constant and low leak current of the insulating film can be obtained.[2]

In contrast to the claimed invention, Ma et al. discloses that the high-k layers (140) and the interposing layers (130 (or 150)) are stacked in turns where the interposing layers (130 (or 150)) act as an oxidation barrier to protect the underlying silicon. (see column 4, line 62 through column 5, line 4). However, Ma et al. does not teach or suggest the following condition: $2.5 > (d1/\varepsilon1 + d2/\varepsilon2 + \ldots + dn/\varepsilon n)$ where dm (m=1, 2, ..., n) is the thickness of the m-th layer of the barrier layers and εm (m=1, 2, ..., n) is the relative permittivity of the m-th layer of the barrier layers..

Thus, it is respectfully submitted that the rejection to Claim 7, 11, and 13 has been overcome and that Claim 7, 11, and 13 are allowable.

The remaining pending Claims 9 and 10 dependent from Claim 7 are therefore also believed to be allowable. Further, the newly added Claims 21-22 dependent from Claim 11 and Claims 23-24 dependent from Claim 13 are also believed to be allowable.

[2] For example, Specification page 25, line 22 through page 26, line 4

Consequently, in view of the present amendment and in light of the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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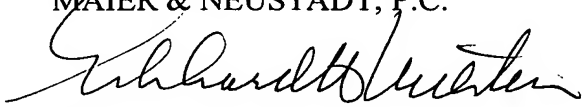

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